

RSNA *News*

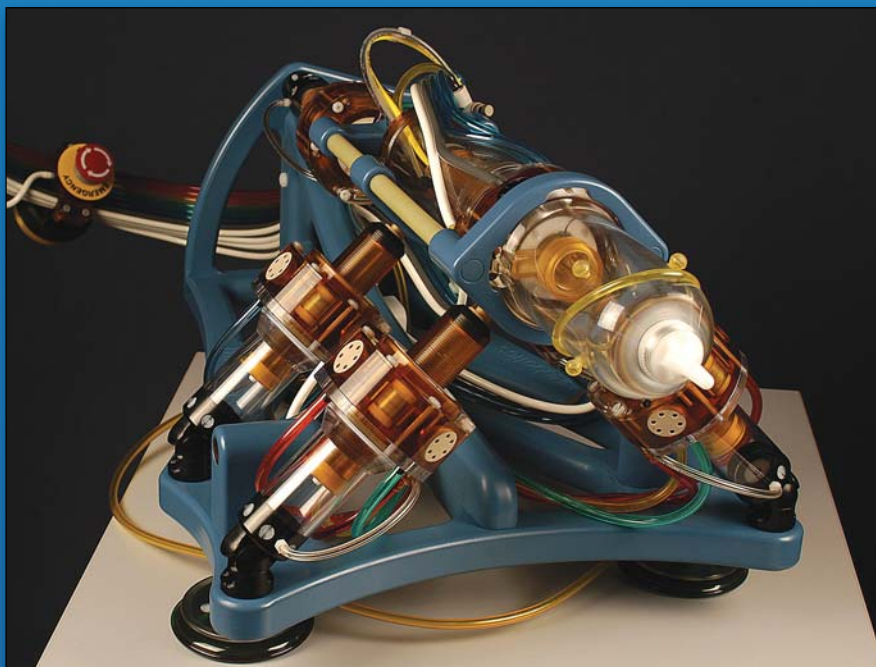


Image courtesy of Dan Schramovici, Ph.D., The Johns Hopkins University

MR-Safe Motor Could Enable In-Scanner Interventions

Also Inside:

- Physicians Respond to Proposed NRC Licensing Changes
- Radiologists Must Ensure Computerized Entry Systems Consider Their Needs
- Immunotherapy Is Radiology's Next Frontier
- RA Evolution Continues

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RSNA News

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ABR Changes Certification Exam Timing, Format

THE American Board of Radiology has announced it will change its oral board certification in diagnostic radiology to a “computer-based and image-rich” examination administered 15 months after residency completion.

The ABR said it will offer the examination annually in September and October through commercial examination centers, adding that the test will be tailored to reflect the training emphasis, experience and the corresponding planned practice of individual residents, who will be allowed to specify up to

four areas of concentration. Every examination will also include material pertinent to all diagnostic radiologists.

The change does not affect residents currently in training. Depending on when the new test is ready, residents beginning their training in the next two to four years can expect to see the changes.

Citing the negative impact of exam preparation on the productivity of fourth-year residents, many educators had called for oral boards to be delayed two years.

“Because medical knowledge in subspecialty fields is advancing rapidly, radiologists must commit to lifelong learning, periodic self-assessment and continuing practice improvement to keep pace,” the ABR said in a statement, acknowledging those who had provided input about the change. “Training programs already have begun to evolve in this direction and it is important that the initial certification process in diagnostic radiology reflect these changes.”

FDA Requests Black Box Warning for Cardiac Imaging Agents

The U.S. Food and Drug Administration (FDA) has asked the makers of two drugs used to enhance cardiac imaging to include a warning emphasizing the risk for serious cardiopulmonary reactions and contraindicating use in patients with unstable cardiopulmonary status.

The micro-bubble contrast agents, marketed as Definity® and Optison™, are used to opacify the left ventricular chamber and improve the delineation of the left ventricular endocardial border in patients with suboptimal echocardiograms. Physicians are instructed to monitor all patients receiving the agents for serious cardiopulmonary reactions during infusion and for 30 minutes following completion of administration.

FDA-approved in 1997, Optison is manufactured by GE Healthcare. Definity was approved by the FDA in 2001 and is manufactured by Bristol-Myers Squibb. FDA received reports of 10 deaths and 190 serious non-fatal reactions following the administration of Definity and one death and nine serious non-fatal reactions following Optison administration.



NIBIB Awards \$12 Million for Quantum Research

A \$2.6 million effort to develop nanoparticles that selectively leave the blood and bind to cancer cells, aiding in the visualization of brain tumors, is one of four projects recently funded with \$12 million in grants from the National Institute of Biomedical Imaging and Bioengineering (NIBIB) Quantum Grants program. NIBIB is part of the National Institutes of Health (NIH).

“Nanoparticle Enabled Intraoperative Imaging and Therapy,” to be developed at the University of Michigan at Ann Arbor, aims to allow maximal surgical resection of tumor mass and facilitate nonsurgical destruction of the residual cancer cells that are remote or extend from the tumor mass.

Also funded by the NIBIB Quantum Grants program were projects to develop:

- Disposable microchips for the diagnosis of metastatic lung cancer—Massachusetts General Hospital, \$3.4 million
- Bio-artificial kidney to eliminate dialysis procedures—Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, \$3.2 million
- Insulin-producing cells to treat diabetes—Wake Forest University Health Sciences, \$3.2 million



European Directive on MRI Postponed

In response to concerns from radiologists and others, the European Commission has announced it will amend and postpone implementation of legislation designed to protect workers with short-term exposure to electromagnetic fields.

Delaying implementation of the Physical Agents Directive until 2012 allows for adoption of an amendment ensuring that the new limits do not adversely affect MR imaging practices, said the commission.

The Alliance for MRI, founded by the European Society of Radiology in response to the proposed legislation, supported the postponement. The original legislation would prevent healthcare staff from assisting or caring for patients during imaging and thwart the work of European scientists as leaders in the MR imaging field, according to the alliance. Other alliance members include European Parliamentarians, patient groups and medical professionals.

ASRT® Eliminates General Education from Annual Meeting

The American Society of Radiologic Technologists (ASRT®) has announced that beginning next year, it will replace its annual conference with the ASRT Annual Governance and House of Delegates Meeting. The general education portion of the meeting has been eliminated and the meeting focus shifted completely to ASRT's governance system.

ASRT said it needed to devote an entire meeting to addressing practice issues that face the radiologic science profession and noted that technologists still have many other options, including online learning, for continuing education. The association had hosted the traditional annual conference since the early 1920s.

ASRT also recently reported results of its 2007 Radiation Therapy Staffing Survey. Indicated was a vacancy rate of 5.4 percent for radiation therapists, continuing the decline seen in recent years. Vacancy rates for medical dosimetrists, medical physicists, radiation oncologists, nurses and ancillary and administrative staff positions all increased compared to the previous year. More information is available at www.asrt.org.

MEDICAL IMAGING COMPANY NEWS

GE Buys Dynamic Imaging

■ GE Healthcare, of Chalfont St. Giles, U.K., has acquired Dynamic Imaging, L.L.C., of Allendale, N.J. Dynamic Imaging specializes in image and information management, offering the IntegradWeb® suite of products. The acquisition of Dynamic Imaging will allow GE Healthcare to expand its information technology products and services across all segments of healthcare, GE said in a statement. Terms of the acquisition were not disclosed.

E-Z-EM to be Acquired by Bracco

■ Bracco Diagnostics Inc., the U.S.-based subsidiary of Bracco Imaging of Milan, Italy, has announced it will acquire E-Z-EM, Inc., of Lake Success, N.Y., for \$241 million. Bracco Diagnostics develops new clinical agents, files them with appropriate regulatory agencies and sells and markets all Bracco products in the U.S. and Canada. E-Z-EM is a manufacturer of contrast agents for gastrointestinal radiology and the developer of VoLumen® oral contrast for multidetector CT and PET/CT studies.

PEOPLE IN THE NEWS

French Society Honors Hricak

2008 RSNA Board Chairman **Hedvig Hricak, M.D., Ph.D.**, has been named an honorary member of the French Society of Radiology. Dr. Hricak is the Carroll and Milton Petrie Chair of the Department of Radiology at the Memorial Sloan-Kettering Cancer Center in New York.

Also named honorary members by the French society were **Moshe Graif, M.D.**, of Giv'at Shmuel, Israel, and **Gerard Hurley, M.D.**, of Dublin, Ireland.



Hedvig Hricak, M.D., Ph.D.

Pettigrew Elected to IOM

Roderic I. Pettigrew, Ph.D., M.D., director of the National Institute of Biomedical Imaging and Bioengineering (NIBIB), has been elected to the Institute of Medicine (IOM). Election recognizes major contributions to the advancement of the medical sciences, healthcare and public health. Formerly a professor of radiology, cardiology and bioengineering and director of the Emory Center for MR Research at the Emory University School of Medicine in Atlanta, Dr. Pettigrew has been NIBIB director since 2002.



Roderic I. Pettigrew, Ph.D., M.D.

ASHNR Awards Gold Medal to Lo

The American Society of Head and Neck Radiology (ASHNR) presented its gold medal to **William H.M. Lo, M.D.** Dr. Lo, who practiced with the St. Vincent Radiological Medical Group in Los Angeles for 40 years, received a presidential citation from the American Otologic Society earlier this year.

Mirabella is Naviscan CEO

Naviscan PET Systems, Inc., has named **Paul J. Mirabella** as its CEO and director. Mirabella spent more than 30 years at GE Healthcare, most recently as president and CEO of global diagnostic imaging. He is a member of the Individual Giving Subcommittee of the Fund Development Committee of the RSNA Research & Education Foundation.

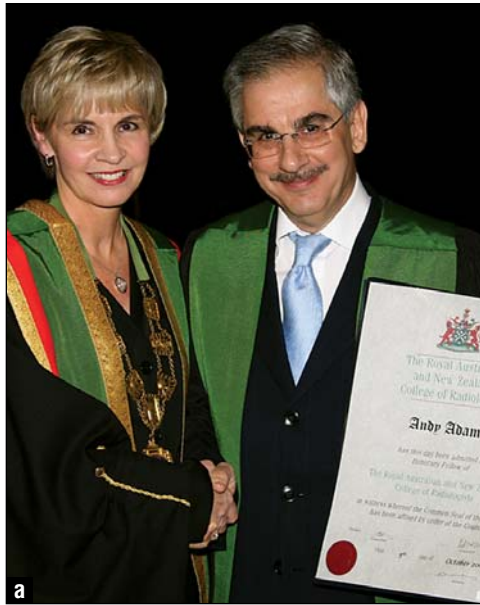
RANZCR Bestows Honors

THE Royal Australian and New Zealand College of Radiologists (RANZCR) announced several awards at its recent annual meeting. RANZCR President **Liz Kenny, M.D.** (left), presented the awards during the meeting in Melbourne, Australia.

(a) **Andy Adam, M.B.B.S.**, was named an honorary member. Dr. Adam is president of the European Society of Radiology and the U.K. Royal College of Radiologists and received the RSNA gold medal in 2006.

(b) **Richard Semelka, M.D.**, was also named an honorary member and received the 2007 Kodak Carestream Professorship, made available to a distinguished overseas radiologist or radiation oncologist invited to attend the RANZCR annual meeting and visit Australian and New Zealand centers. Dr. Semelka is director of MR imaging services and vice-chair of clinical research of the Department of Radiology at the University of North Carolina Hospital in Chapel Hill.

(c) RANZCR presented its gold

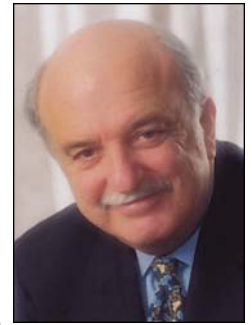


medal to **Barry Moore, M.D.** Dr. Moore, who is retired from radiology practice, was recognized for more than 30 years of service to RANZCR.

Meyers Publishes Happy Accidents

Morton A. Meyers, M.D., chair emeritus of radiology at the SUNY Stony Brook Health Sciences Center, has published *Happy Accidents: Serendipity in Modern Medical Breakthroughs*. "Meyers' account of such happy accidents as the discoveries of the lifesaving anticoagulant Coumadin, the manic-depression therapeutic lithium and others is a significant brief on creativity's critical role in medical research," according to *Booklist*.

Dr. Meyers is also the author of *Dynamic Radiology of the Abdomen: Normal and Pathologic Anatomy*, now in its fifth edition, and founding editor-in-chief of the journal *Abdominal Imaging*.



Morton A. Meyers, M.D.



New NASCI Officers

Pamela K. Woodard, M.D., is the new president of the North American Society for Cardiac Imaging (NASCI). Dr. Woodard is an associate professor of radiology and co-head of cardiac CT and MR imaging at the Washington University School of Medicine in St. Louis. She received an RSNA Research Fellow Grant in 1996 and an RSNA Research Scholar Grant in 1999.

Vincent B. Ho, M.D., is NASCI president-elect and **Geoffrey D. Rubin, M.D.**, is secretary-treasurer.



Pamela K. Woodard, M.D.

Bryan is ARR President

R. Nick Bryan, M.D., Ph.D., 2002 RSNA president and recipient of an RSNA gold medal at RSNA 2007, is the new president of the Academy of Radiology Research (ARR). Dr. Bryan is the Eugene P. Pendergrass Professor and chair of the Department of Radiology at the University of Pennsylvania School of Medicine in Philadelphia. He is a representative of the RSNA Research & Education Foundation to the ARR.

Steve Seltzer, M.D., is ARR vice-president and **James H. Thrall, M.D.**, who also received an RSNA gold medal at RSNA 2007, is ARR secretary-treasurer. Dr. Thrall is a member of the RSNA Research & Education Foundation Board of Trustees.



R. Nick Bryan, M.D., Ph.D.

Radiology Delegation Visits China

A radiology delegation visited Beijing, Guilin and Shanghai, China, in August as part of the People to People ambassadorial organization. Visiting two hospitals in each city, the delegation saw highly sophisticated radiology being used in western style medicine and learned how modern radiology contributes to diagnostic aspects of traditional Chinese medicine, said delegate Philip O. Alderson, M.D., (front row, third from left) chair of the RSNA Public Information Committee. The delegation, which included radiologists from the U.S., Guatemala, South Africa and Indonesia, is pictured at the traditional entrance to Peking Union Medical College Hospital.

RSNA representatives also visited China for the Chinese Congress of Radiology in October. See Page 21 for more information.



Send news about yourself, a colleague or your department to rsnanews@rsna.org, 1-630-571-7837 fax, or *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523. Please include your full name and telephone number. You may also include a non-returnable color photo, 3x5 or larger, or electronic photo in high-resolution (300 dpi or higher) TIFF or JPEG format (not embedded in a document). *RSNA News* maintains the right to accept information for print based on membership status, newsworthiness and available print space.

MY TURN

Signs of the Times

SOMEONE once remarked that it is easy to predict the future. Knowing what to do now is what's so difficult.

As we race towards 2008, making a blur of our daily professional lives, a blurring of the borders and boundaries of our specialty is also taking place. Reminiscent of Dickens' Ghost of Christmas Future, our chair of surgery recently said he will "follow the signs, not the specialties" with regard to who may perform a new minimally invasive procedure. Prescient as I believe he was, the boundaries—often barriers—among the specialties, namely surgery and radiology, have been redefined or eliminated by forward-thinking interventional radiologists and surgeons. Image-guided radiation therapy, robotic surgeries and stent grafts are in daily use improving therapeutic accuracy and outcomes.

What next? Why not diagnostic

radiology and anatomic pathology? We do the same things in many ways. An array of tools to measure and observe changes, ranging from scanning electron microscopes to optical coherent tomography devices, populates both departments. While the Armed Forces Institute of Pathology tries to predict or manage its future, have not the lessons been learned that the pathobiology of diseases, when known, leads to more timely and accurate diagnosis?

While Robert Frost wrote, "Good fences make good neighbors," our nearly all-digital world of PACS, 4D-CT, fMRI, MRS and PET/CT knows not of such fences. I like to think of any boundaries as virtual fences that

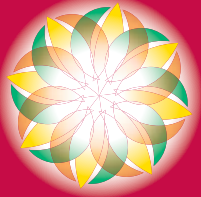


Bruce L. McClennan, M.D.

may demark an area of interest or research, but can be reconstructed in the interest of improving what we do as physicians and as radiologists. Why not engage our colleagues, in a specialty like anatomic pathology, who are focused on challenges similar to ours? I suspect the New Year 2008 will be full of many new

signs to follow. Hopefully we won't be moving so fast that the signs become too blurred to read. I'll be spending more time next year talking to my colleagues in the pathology department.

Bruce L. McClennan, M.D., is a professor of diagnostic radiology at Yale University School of Medicine and an attending at Yale New Haven Hospital. He is also editor of RSNA News.



RSNA

Highlights™ 2008: *Clinical Issues*

February 18–20 ▶ Ritz-Carlton/JW Marriott Orlando, Grande Lakes



Course emphasis will include:

- ▶ Cardiac imaging
- ▶ Head and neck imaging
- ▶ Thoracic imaging
- ▶ Breast imaging

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RSNA Education



MR-Safe Motor Could Enable In-Scanner Interventions

A NEW NON-METALLIC, non-electric motor safe for use during MR imaging extends remote robotic hands to perform image-guided interventions within closed-bore high-field scanners.

The first application of the motor is for prostate needle interventions including brachytherapy and biopsy.

“Current needle interventions of the prostate systematically target regions of the gland but do not directly aim to imaged locations of abnormality,” said lead developer Dan Stoianovici, Ph.D., an associate professor of urology and mechanical engineering at The Johns Hopkins University and director of the Urology Robotics Program of the Brady Urological Institute in the School of Medicine. “We have been working to create instruments that help physicians guide prostate procedures based on advanced imaging.”

The motor, known as PneuStep, works with a new needle biopsy robot called MrBot to accurately target a tumor during MR imaging and obtain tissue samples. An article in the February 2007 issue of *IEEE/ASME Transactions on Mechatronics* describes PneuStep.

Dr. Stoianovici said the four-year, National Institutes of Health-funded project to develop PneuStep and MrBot was extremely challenging. “Robots normally use components that are totally incompatible with MR,” he said, referring to the electric currents and metal that interfere with the image.

Containing only plastic, ceramic,

glass and rubber, the new motor consists of three pistons connected to a series of gears. The gears are turned by air pulses, which are in turn controlled by a computer located in a room adjacent to the MR machine.

“Using pneumatics was not simple either because it was not very precise four years ago when we began this research,” said Dr. Stoianovici. “Our goal was to move the needle precisely—we had to make a lot of motor prototypes. It took three years to create our current motor and robot so that they can work inside the MR environment. This was very well invested time, because it is a unique and very enabling technology.”

Conquering MR Paves Way for Other Modalities

The robot goes alongside the patient in the MR scanner and is controlled remotely by observing the MR images.

The motor is rigged with fiber optics, which feed information back to the computer in real time, allowing for both guidance and readjustment. “The robot takes digital coordinates of the imaging abnormality and directs a needle precisely to that spot,” said Dr. Stoianovici. “Humans are not digital devices. We have intelligence but robots can better understand the digits.”

He said the prototype worked accurately in cadaver testing, always coming within just a millimeter of the target and, remarkably, without any trace on the image. Preclinical trials



Dan Stoianovici, Ph.D.
The Johns Hopkins University

have shown, however, that the robot must be refined to improve ease of use and sterility. As the robot is designed right now, it is difficult to change needles from patient to patient. Additional testing for U.S. Food and Drug Administration protocols is under way with support from the Prostate Cancer Foundation and the Patrick C. Walsh Foundation.

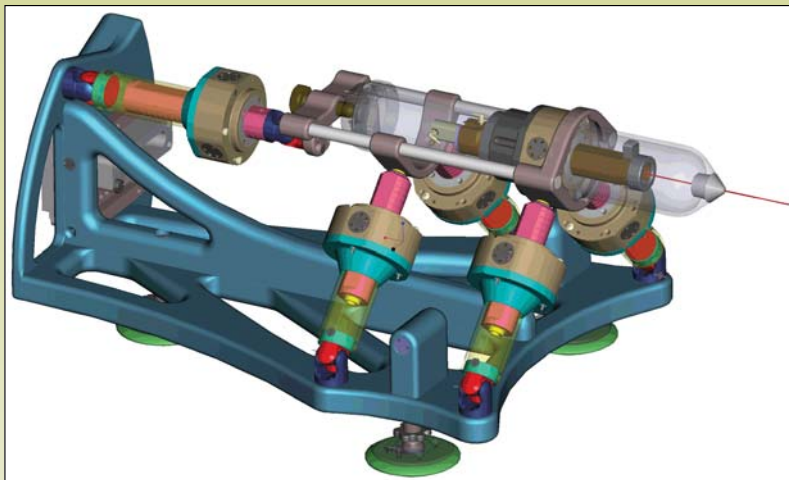
Dr. Stoianovici said the first-of-its-kind, fully automated robot gets its uniqueness from the setting in which it was created. “Our lab has a very unusual look for a urology lab, with advanced design and manufacturing equipment that is very rare even in engineering departments,” he said.

The appeal of the “MR stealth” motor, he added, comes not only from its ability to perform precise needle procedures with the robot under direct image control, but also to facilitate development of other interventional devices.

“Never before has it been possible to perform precise motion at the isocenter of the highest field scanner with-

Never before has it been possible to perform precise motion at the isocenter of the highest field scanner without interfering with the image and in a manner entirely safe for the patient and personnel.

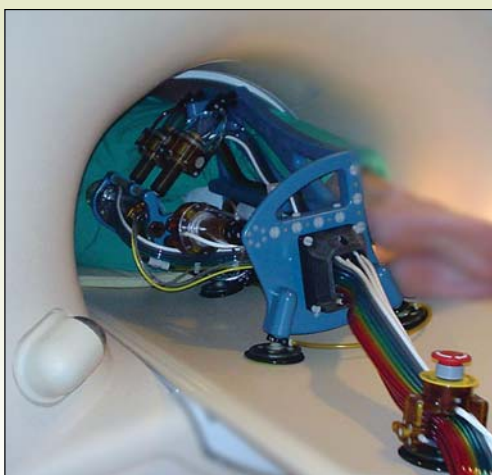
Dan Stoianovici, Ph.D.



Computer-aided design rendering of the MrBot robot.



MrBot is a plastic, electricity-free robot. The robot is connected, with air hoses and optic fibers, to a control cabinet located outside the MR imaging room. The cabinet contains all control electronics and communicates with the robot through electro-optical and electropneumatic interfaces.



MrBot and male patient in a 3T closed bore MR imaging scanner.

out interfering with the image and in a manner entirely safe for the patient and personnel,” said Dr. Stoianovici. Given that the MR imaging environment is the most challenging for compatibility with mechatronic devices, the invention of PneuStep is an important first step toward making multi-imager compatible instruments, he said.

Testing Under Way with MR Spectroscopy

Researchers are currently planning to use PneuStep and MrBot with multi-parametric MR imaging for targeted needle biopsies. The promise of a new MR-safe motor indeed lies alongside growing application of functional MR techniques like spectroscopy, diffusion-weighted imaging and dynamic contrast-enhanced MR imaging, which can augment conventional MR imaging of the prostate to provide more accurate diagnosis and staging of cancer, said

Katarzyna J. Macura, M.D., Ph.D., an assistant professor in the Russell H. Morgan Department of Radiology and Radiological Science at The Johns Hopkins Medical Institutions and an MR expert in genitourinary imaging.

“The robotic devices provide a high degree of precision,” said Dr. Macura, noting that this precision can be utilized for both diagnosis and the delivery of local treatments using heating or freezing techniques to replace radical therapies like surgery and radiation.

Spectroscopy assesses decreased citrate, the marker of normal prostate gland tissue, and elevated choline, the marker of tissue proliferation that occurs when cell membranes turn over in abundance, which occurs in tumors. Dynamic contrast enhancement or diffusion-weighted imaging evaluate tissue perfusion and water molecule diffusion at the cellular level.

“MR imaging over the decades has had its ups and downs as far as prostate cancer diagnosis is concerned,” said Dr. Macura. “Today, more robust strategies allow us to improve spatial resolution and temporal resolution, and to apply new functional MR imaging parameters to detect cancer and guide tissue sampling. The paradigm is shifting from total prostate gland to intragland treatment options. In the future, we will see truly minimal interventions in prostate cancer treatment, for which precise tumor localization, biopsy and therapy delivery will be vital.” □

Learn More

■ An animation of the PneuStep MR-safe motor developed by researchers at The Johns Hopkins University is available at urology.jhu.edu/urobotics/projects/PneuStep/. An animation of an accompanying needle biopsy robot, MrBot, is available at urology.jhu.edu/urobotics/projects/MrBot/.

Physicians Respond to Proposed NRC Licensing Changes

EFFORTS BY the Nuclear Regulatory Commission (NRC) to tighten screening of applications for licenses to acquire sealed radioactive sources have some physicians concerned about consequences for nuclear medicine.

In the 30 years since its inception, the NRC and the 34 “Agreement States” that share its regulatory powers have granted approximately 22,000 licenses for medical, industrial and research use of sealed radioactive sources. Before Sept. 11, 2001, the NRC process focused on safety and prevention of inadvertent exposure, with tighter controls placed on the more dangerous quantities of nuclear materials represented by Levels 1 and 2 on the International Atomic Energy Agency’s 1-to-5 scale.

After Sept. 11, officials deemed it more likely that an enemy, disregarding self-preservation, might build radiological dispersal devices (RDDs), or “dirty bombs,” out of aggregated amounts of the more accessible materials in lesser threat Categories 3 and 4. The NRC announced a full review of its security standards; however, its process was found to be vulnerable last year.

In October and November 2006, two newly incorporated businesses offering addresses not far from Washington, D.C., applied for licenses to acquire sealed radioactive sources. One applied to the NRC and the other to Maryland, an Agreement State. Responding via telephone and fax, NRC officials granted the requested license, which the applicants then altered to show a greater amount of radioactive material than authorized. Receiving the altered document, a nuclear pharmacy agreed to furnish the

materials—45 moisture density gauges containing americium 241 and cesium 137.

Maryland exercised its option to conduct an onsite inspection, forcing the businessmen to withdraw their application. In both cases, the applicants were actually investigators for the Government Accountability Office, operating at the direction of the Senate Permanent Subcommittee on Investigations. The so-called business addresses were West Virginia mail drops.

Noting it was the third time the GAO had discovered gaps in NRC security, ranking subcommittee member Sen. Norm Coleman, R-Minn., said getting the license had been as easy for the bogus applicants “as ... [getting] a DVD at Netflix.”

The best case scenario is that [NRC action] improves safety for everyone. The worst case is that new layers of bureaucracy and expense are added and everything becomes slower, with restrictions that are not even meaningful.

Nancy Ellerbroek, M.D.

The late NRC Commissioner Edward McGaffigan told reporters in June 2007 that the agency regretted issuing the license without checking further but, in a world of finite resources, dirty bombs are considered a less significant threat. An NRC press statement noted that the bomb that could have been made from the materials sought by the GAO investigators, even with the 10-fold alteration of the

application increasing the materials from Level 4 to Level 3 threat, would have had “no more radiation than a CAT scan to the chest and stomach.”

Responded Sen. Coleman: “We live in a post 9-11 world. The NRC has been operating in a post-1945 world.”

Implications for Nuclear Medicine

“The sting was the right thing, for the public’s sake and for our patients,” said Nancy Ellerbroek, M.D., medical director of radiation oncology at Providence Holy Cross Medical Center in Mission Hills, Calif., and a member of the American College of Radiology (ACR) Commission on Radiation Oncology. “It is important that the action taken is appropriate. The best case scenario is that it improves safety for everyone. The worst case is that new layers of bureaucracy and expense are added and everything becomes slower, with restrictions that are not even meaningful. The devil is in the details.”

Nearly 20 million nuclear medicine procedures for diagnosis and therapy are carried out each year in the U.S., according to a report released this year by the Committee on the State of the Science of Nuclear Medicine, formed by the National Academies in response to a request from the U.S. Department of Energy and National Institutes of Health.

At a subcommittee hearing July 12, 2007, the GAO recommended the NRC improve its process of examining applications, consider mandatory site visits and explore options to prevent counterfeiting. The subcommittee in turn recommended that the NRC “reevaluate ...[its] apparent good-faith presumption,” establish a Web-based licensure system and regulate Category 3 materi-

Model Number, Sealed Source or Device Type, and Principal Use Code

The application must clearly state the model number designation for the product. This model number will be listed on the registration certificate for the product and may be listed on licenses of persons applying to use the product. The model number is used by NRC and Agreement States to uniquely identify the product.

An applicant may request to have a model listed as a series. In order to have the model listed as a series, there should be similarities in the design and construction of the models in the series.

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October 5, 2007

No. 07-132

NRC ESTABLISHES NEW ADVISORY PANEL ON NUCLEAR MATERIALS LICENSING VULNERABILITIES

The Nuclear Regulatory Commission is establishing a special advisory panel to help identify vulnerabilities in the agency's nuclear materials licensing program.

The new panel, designated as the Independent External Review Panel to Identify Vulnerabilities in the U.S. Nuclear Regulatory Commission's Material Licensing Program, is the result of the NRC's licensing process in three recent reports.

als more stringently with pre-licensure inspections and inclusion in its National Substance Tracking System, the launch of which is now delayed to Fall 2008.

NRC Takes Initial Action

The NRC temporarily suspended issuing new licenses, announced mandatory onsite visits for all new license applicants during an interim period and promised to reevaluate licensing procedures. An Independent External Review Panel appointed to probe the agency's vulnerabilities is expected to submit its report in early 2008.

Ralph Lieto, M.S.E., radiation safety officer at St. Joseph Mercy Hospital in Ann Arbor, Mich., serves on the NRC Advisory Committee on the Medical Uses of Isotopes and as an ACR physicist. Lieto said further restricting sources down to Category 3.5 will affect "everyone with a generator greater than 800 mCi or who has more than 2 Ci Technetium-99m in any one location, as well as every Ir-192 high dose rate (HDR) source. You're talking about freestanding oncology clinics as well as large medical centers, and if increased controls get implemented, security costs go up for these sources.

This isn't good for nuclear medicine."

The NRC must deny radioactive sources to unauthorized people but with minimal burden to legitimate users, said Cassandra Foens, M.D., a radiation oncologist at Covenant Cancer Treatment Center in Waterloo, Iowa, who chairs ACR's Federal Regulatory Committee. "ACR has suggested that the NRC consider requiring onsite visits for new applications only, as a person who wants access to unauthorized radioactive materials will not be very successful at impersonating a hospital," she said. "Applications that obviously come from healthcare institutions such as hospitals or medical schools might be considered for onsite inspection only if there is anything concerning in the written application."

Finding Ideal Balance

Gloria Romanelli, ACR senior director of legislative and regulatory relations, said NRC commissioners "need to strike a careful balance" between making materials available to patients and protecting the public.

Given that the NRC's purported approach will be risk-based, Romanelli said, she's hopeful a balance can be

found. While changes are no doubt coming, "If those changes manage to increase public protection and thereby protect the reputation and availability of this nuclear material, then we're all in a better place," she said. "Our bottom-line goal is to preserve access to nuclear material for medical use while keeping administrative burdens and associated costs to a minimum." □

Learn More

- Information about the "Independent External Review Panel to Identify Vulnerabilities in the U.S. Nuclear Regulatory Commission's Material Licensing Program" is available at www.nrc.gov/reading-rm/doc-collections/news/2007/07-132.html.
- The abstract for a related article published in the *Journal of the American College of Radiology*, "10 CFR Part 35: Changes to the NRC Rule Governing the Medical Use of Radioisotopes and Implications for Radiologic Practice," is available online. Go to dx.doi.org and enter [doi:10.1016/j.jacr.2005.09.012](https://doi.org/10.1016/j.jacr.2005.09.012).

Immunotherapy Is Radiology's Next Frontier

RESearchers at Duke University Medical Center report using mechanical high-intensity focused ultrasound (HIFU) to activate the immune system to recognize and attack malignant tumors, pointing the way toward a whole new field in cancer therapy for radiologists.

The study was detailed in the August 3, 2007, issue of the *Journal of Translational Medicine*.

Similar to radiofrequency ablation, HIFU operates on a much smaller scale and without needles. HIFU essentially shakes the tumor, causing it to fracture and release parts of dead tumor cells in a form that can be recognized by the immune system. This immunogenic approach allows radiologists to treat a primary tumor while achieving a systemic approach to combating metastatic disease.

HIFU got its start as researchers contemplated an immune system apt to overlook cancer cells and suggested that for an effective response to occur, the body might need assistance in recognizing cancer cell surface proteins, as well as other proteins enclosed within cancer cells that send a danger signal.

In their research, the Duke team used a special ultrasound probe to create cavitation within the tumor. Researchers found that antigen-presenting cells recognized cancer specific proteins and responded by creating an immune cell that conferred either immunity or resis-

tance to that particular cancer.

"It's a similar concept to vaccinating a patient for cancer with their own cancer cells," said Bradford Wood, M.D., chief of interventional radiology research and acting director of science and research for the diagnostic radiology department at the National Institutes of Health Clinical Center. "Immunotherapy is an entire discipline within oncology, and image-guided therapies can play a role in immunomodulation," said Dr. Wood.

Mechanical HIFU Created Immune Response

Duke researchers used thermal and mechanical HIFU to treat mice with MC-38 colon adenocarcinoma, observing the effects on immune response.

The study was part of a series designed to investigate tumor treatment with HIFU. Researchers evaluated reduction in tumor size, immune system activation and the possibility that increased immune response would have more dif-

fuse activity against other tumors in the body.

Mechanical disruption of the tumor induced a more effective immune response than thermal or no treatment, the study revealed. Co-author Michael A Morse, M.D., associate professor of medicine at Duke University

Medical Center, explained: "We looked at this several ways. We measured the T cells in the mice after they were treated with either mechanical HIFU or thermal HIFU. We looked at their



Michael A Morse, M.D.
Duke University

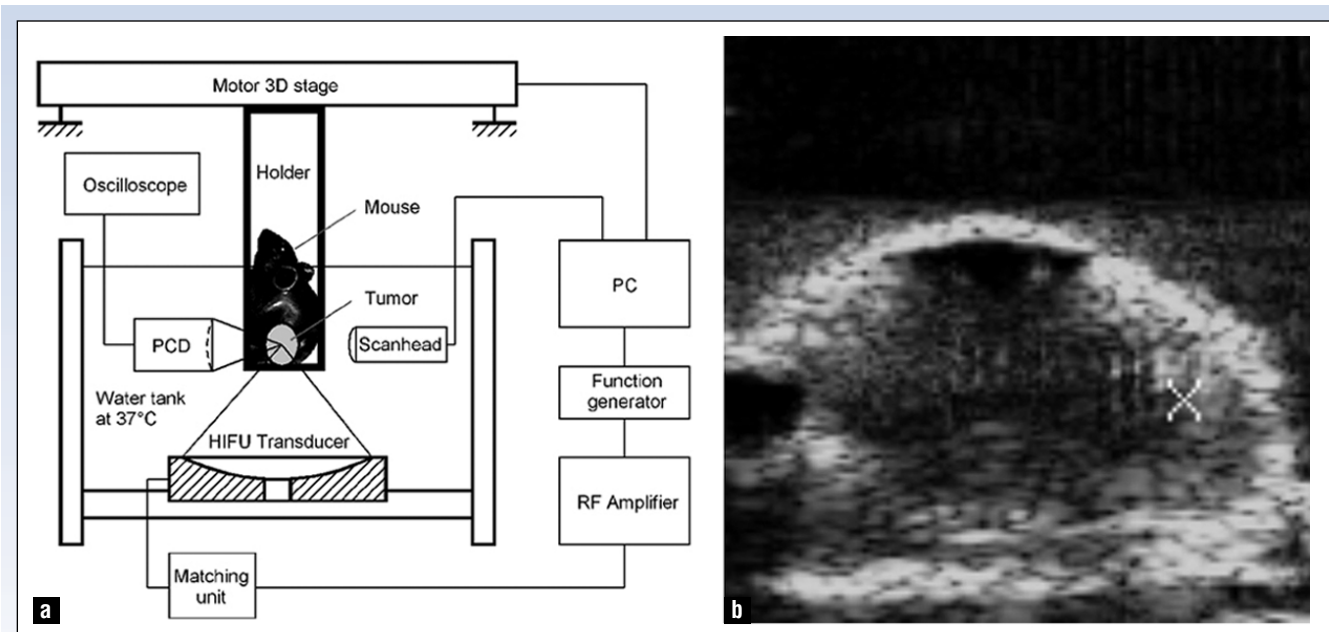
ability to respond to tumor cells in the laboratory, and T cells we removed from the mice recognized the tumor. The immune system must have been activated against the tumor and it was more effective with mechanical HIFU than thermal HIFU."

Researchers also studied the tumor and found primary tumor size was smaller with thermal HIFU than with mechanical HIFU or no HIFU application. While heating a tumor during treatment may have proven a bit more effective than the mechanical HIFU, Dr. Morse said, researchers still favor mechanical HIFU since the resulting immune response may be of benefit in the prevention and treatment of metastatic disease.

HIFU and radiofrequency, already widely used in clinical radiology, stimulate the body's immune response. The mechanistic bioeffects and roles of HIFU are not yet completely understood, but the Duke study shows

This is a scenario that can image to define, then partly kill and stimulate a tumor all in the same setting, with image-guided energy deposition and a little booster to the oncologist's approach of immunotherapy.

Bradford Wood, M.D.



HIFU exposure system and B-mode guidance.

(a) Diagram of the in vivo HIFU exposure setup. (b) Alignment of the mouse tumor with the focus of the HIFU transducer was aided by B-mode ultrasound imaging.

Hu, et. al. "Investigation of HIFU-induced anti-tumor immunity in a murine tumor model." *Journal of Translational Medicine* 2007;5:34.

the potential for harnessing such a response, said Dr. Wood.

Dr. Morse said that when studies move from the mouse model to humans, researchers hope to activate an immune response that can prevent or treat metastatic disease, not just the primary tumor.

Research Spotlights Interdisciplinary Strengths

NIH researchers have studied mechanical HIFU to enhance drug delivery or efficacy, said Dr. Wood, but the work of the Duke team differs from standard thermally ablative HIFU or other experimental mechanical types of HIFU. Depending upon how it is used, HIFU can cause cavitation or shear stresses.

"Mechanical shear stress may be induced by a pulsed, focused ultrasound," said Dr. Wood. The HIFU in the study is not purely mechanical—it is likely that some cavitation plus thermal and shear stress effects occur, the latter of which can actually move tissue on a very small scale."

Previous HIFU research has focused on enhancing thermal ablation efficiency. HIFU is FDA-approved for fibroid ablation and is being investigated for drug delivery, pain control, thrombolysis, seizures and deep brain stimulation.

"The most fertile grounds for novel work are in the Neverlands between disciplines that take advantage of each others strengths," Dr. Wood said. "This is a scenario that can image to define, then partly kill and stimulate a tumor all in the same setting, with image-guided energy deposition and a little booster to the oncologist's approach of immunotherapy.

"HIFU is in its infancy," Dr. Wood continued. "There is still much work to be done in this area and I am glad there are radiologists and radiologic scientists who are interested. It could open up a whole new field of cancer therapy for radiologists. The road is long, but noninvasive tissue destruction or image-guided drug deposition will be the surgery of the future." □

Learn More

■ The abstract for "Investigation of HIFU-induced anti-tumor immunity in a murine tumor model" is available at www.translational-medicine.com/content/5/1/34.

RA Evolution Continues

TWO YEARS after the first radiologist assistants (RAs) graduated and entered the workforce, organizations supporting their use continue to examine guidelines for what RAs can and cannot do in a clinical setting and work to increase the number of states that recognize RAs.

Other challenges include improving Medicare coverage of RA services and further educating the radiology community as to who RAs are and how they benefit the specialty, said experts, some of whom participated in an RSNA 2007 special focus session, "The Radiologist Assistant and the Radiology Practitioner Assistant: Scope of Practice."

The RA is an advanced-level radiologic technologist who works under the supervision of a radiologist to enhance patient care by assisting the radiologist in the diagnostic imaging environment. With candidates entered in 10 academic programs and with 17 states now recognizing RAs through state licensure and/or regulation, the position has grown in stature.

The age of the RA has dawned in stages over the past decade and a half. In the early 1990s, an impending shortage of radiology professionals spurred national organizations to consider the idea of RAs. The definition of the RA role and educational curriculum occurred in 2002, with the opening of the first program in 2003. The first RAs graduated and were certified in 2005.

2007 saw the graduation of more RAs, creation of more RA educational programs and growth in the number



Paul H. Ellenbogen, M.D. (right), moderated an RSNA 2007 special focus session on the radiologist assistant scope of practice.

of states whose regulations recognize RAs.

RA Role to be Updated over Next Couple Years

The Radiologist Assistant Role Delineation document, created in January 2005 by the American Registry of Radiologic Technologists (ARRT®)

We need to educate the professional community, let folks know that RAs do not compete with radiologists but instead help them.

Jerry B. Reid, Ph.D.

with the assistance of the American College of Radiology (ACR™) and American Society of Radiologic Technologists (ASRT®), categorized RA tasks by whether they require personal, direct or general supervision from a radiologist.

While the document and its accompanying practice standards remain in force today, the RA role is evolving, said Jerry B. Reid, Ph.D., ARRT Executive Director. ARRT is creating a mechanism to update the RA role over the next two years, said Dr. Reid, add-

ing that the most likely changes will be eliminating tasks that RAs no longer frequently do, in some cases due to technological advances.

ACR Senior Director of Member Services Brad Short agreed the RA role will evolve. "We have developed a process for that evolution," said Short. "The process is still being put into place and the role will continue to change as clinical practice evolves within radiology."

As of fall 2007, 17 states had recognized the role of the RA and issued regulations and requirements, usually ARRT certification. ACR is working to expand that number, according to Ariel Gonzalez, J.D., M.A., ACR assistant director of state legislative relations.

"Our state radiology societies, in the past year, have been more proactive on the RA issue, in working with state legislatures as well as radiologic technologists within their states," said Gonzalez. "I think in the next year or so there will be an increase in RA legislation. As more RAs graduate from



Lynn May, C.A.E. (right), chief executive officer of the American Society of Radiologic Technologists, said an aging Baby Boomer generation will likely stimulate demand for radiology professionals in the years ahead.

programs, it's becoming a more prevalent issue in the states."

While 33 states still do not address RAs in their laws or regulations, ACR Associate General Counsel Thomas Hoffman, J.D., C.A.E., warned against seeing lack of regulation as a green light. "One could argue that if the RA is not specifically mentioned in the state law, then he or she is not authorized to practice and would probably do so at their own peril," said Hoffman. "If I were in radiology practice, I would certainly check with a qualified healthcare attorney who could look at the landscape in my own jurisdiction and give me a good legal opinion."

Lynn May, C.A.E., ASRT chief executive officer, feels that RAs, unlike radiologic technologists who work primarily in hospitals, will gravitate more toward radiology practices. "It's how they fit into the overall activities of the practice," said May.

Medicare Reimbursement, Public Education are Hurdles

As more schools offer RA programs and the number of RA graduates increases, one major hurdle on the horizon is Medicare coverage for clinical use of RAs, said experts. Medicare doesn't formally recognize the RA as

a specific practitioner category, noted Hoffman, and consequently, RAs lack independent billing authority under Medicare. Their services only are reimbursed through their employers' practice expenses.

"Any radiologist who is considering hiring an RA has to think carefully about how they would bill for RA services," said Hoffman, noting that the issue has prevented some radiology practices from hiring RAs. Short added that it's an issue ACR is working to resolve.

Despite the obstacles, experts say the use of RAs can only be positive for radiology. May noted that the RA concept was developed more than seven years ago in response to an impending shortage of radiologists and radiologic technologists. The RA was seen as both a support for busy radiology practices and a career ladder inducement for the recruitment and retention of radiologic technologists. While the shortage of radiologic technologists has abated somewhat recently, an aging Baby Boom generation will likely stimulate demand for additional radiologic technologists in the years ahead, producing another shortage. Surges and shortages of technologists seem to follow a 10-year cycle, he added.

As relevant organizations continue to certify RAs, expand legislation and tweak the RA role delineation, experts said there remains the task of incorporating RAs into the radiologic community. Said Dr. Reid, "We need to educate the professional community, let folks know that RAs do not compete with radiologists but instead help them." He noted that such acceptance may have been slow in the past but will increase as more radiologists in more states have contact with RAs and see how they can help improve their efficiency and practice.

Gonzalez characterized the RA program as still in its "toddler phase." Added Short, "We are working towards the active employment of RAs, so they can fulfill the role envisioned for them within the profession. We're in that process and working diligently to make it a reality." □

Learn More

More information on the Registered Radiologist Assistant Program is available from the American Registry of Radiologic Technologists at www.arrt.org/index.html?content=radasst/raintro.htm.

Radiologists Must Ensure Computerized Entry Systems Consider Their Needs

RADIOLOGY must stake a unique claim in computerized provider order entry (CPOE) as it is established at healthcare institutions around the world, said radiologists working through its trial stages.

As implied by the name, a CPOE network enables physicians to enter orders into a computer system and communicate the orders electronically to other departments. In addition to eliminating paperwork and unnecessary steps, CPOE is intended to improve communication and minimize errors.

While currently only a small percentage of healthcare providers have fully integrated CPOE, many organizations have definite near-term goals. The New England Healthcare Institute, for example, aims to implement CPOE in all Massachusetts hospitals over the next four years. Broad-scale CPOE integration, according to proponents, will also facilitate movement toward a universal electronic health record (EHR).

Daniel I. Rosenthal, M.D., is professor of radiology and associate radiologist-in-chief at Massachusetts General Hospital, where a radiology order entry (ROE) system is in place. ROE is a Web-based CPOE application that allows referring physicians to electronically order and schedule outpatient imaging and image-guided procedures from any workstation inside their firewall.

“Our system is a homemade product that strives for accuracy, completeness and user convenience,” said Dr. Rosenthal. “Accuracy includes things like identifying each person who makes entries and providing clear and complete descriptions of what is being requested.”

“CPOE should also block or discourage redundant exams by detecting similar exams in the patient’s record,” Dr. Rosenthal continued. “A complete request should include enough history so that if the exam is normal, it can be assigned an ICD-9 code and billed.”

Other advocates of CPOE said the systems can also benefit patients by recognizing overutilization of studies using radiation, such as CT scans. When ordering a study, the provider may receive a message indicating that the patient may have undergone too

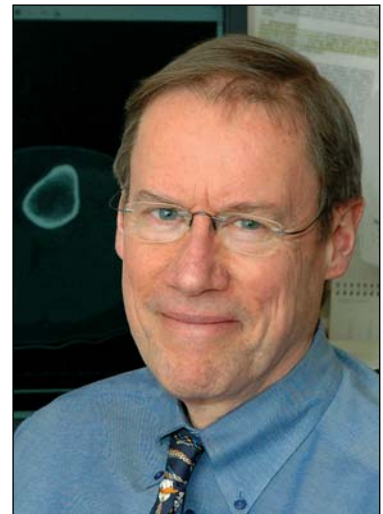
many studies with radiation, or may have exceeded a recommended exposure load.

CPOE systems should also be modified, said advocates, to direct ordering physicians

to specific radiologists for consultation, especially when interventional procedures are requested.

Radiology Has Unique Concerns

Dr. Rosenthal said that while most CPOE systems recognize orders for imaging procedures, they often treat them generically, in the same way they



Martin H. Reed, M.D.
Children's Hospital of Winnipeg

would laboratory or pharmacy orders. “Radiology is more complex and the system should reflect that,” Dr. Rosenthal said. “This is a major issue that affects our patients’ care and safety.”

A CPOE alert to warn against the possibility of drug interaction, allergy or overdose, as recommended by the Leapfrog Group for Patient Safety, is just one example of a feature that is important but not created with radiology in mind, said Dr. Rosenthal. In an ideal system, the user would be warned only about allergies or drugs that are relevant to the imaging procedure being requested, he said.

The design of a radiology order entry system is complicated by the fact that some users such as support staff could have access but limited knowledge about radiology, Dr. Rosenthal added. He said he once encountered a computerized order into which, at the

Computerized physician order entry should block or discourage redundant exams by detecting similar exams in the patient's record.

Daniel I. Rosenthal, M.D.

Contraindications to Contrast Use section, someone had entered “Contrast must be used.”

The use of standard language to describe the indications for examinations, said Dr. Rosenthal, also makes it much more feasible to analyze outcomes based upon the patient’s history.

Canadian Case Study Yields Success

Martin H. Reed, M.D., chair of the guidelines working group of the Canadian Association of Radiologists (CAR) and head of the radiology division at Children’s Hospital in Winnipeg, has also experienced the trials of CPOE integration firsthand. Dr. Reed’s department has incorporated CAR guidelines into an electronic order entry system designed specifically for diagnostic imaging at Children’s Hospital.

Dr. Reed and colleagues implemented the software in a few departments in July 2006 and recently reported data collected through August 2007. Though CPOE is not yet mandatory, said Dr. Reed, most departments have integrated it almost completely.

“Some CPOE components may still slow physicians down slightly, but not so much that they’re willing to stop using it,” said Dr. Reed. “Emergency, for example, is obviously a very fast-paced, high-stress department, yet they use computerized entry extensively.”

As for the idea that systems are not appropriately tailored to radiology’s needs, Dr. Reed said he has noticed similar trends. “There are systems, for instance, that have you click ‘X-ray’ just as you would for other tests, such as blood tests,” he said. “For a radiologic interventional procedure, single click might not be appropriate because confounding factors might require consultation with the interventional radiologist.”

Drs. Rosenthal and Reed said CPOE guidelines for radiology will be critical as the EHR is universally integrated. They added that CPOE could also have a small but significant impact

on how physicians write diagnostic imaging orders. CPOE could eventually help guide physicians to the best imaging techniques and reduce the number of redundant tests ordered, they said.

Results from the Winnipeg study suggested that around 10 percent of orders were excessive, redundant or not for the most beneficial diagnostic modality. Dr. Reed added that from the standpoint of overlap, an order for a child with a broken ankle could be categorized as pediatrics or fracture. The incidence of overlap may be as high as 20 or 30 percent.

In some cases, said Dr. Reed, ordering a less-than-optimal imaging procedure was reasonable under the circumstance. “For instance, our hospital doesn’t offer 24-hour access to MR imaging equipment and an emergency physician may order a CT scan instead because it’s immediately available,” he said.

Relationship with Insurance Companies Critical

Another challenge to the use of CPOE integration to provide decision support for the proper use of imaging, said Dr. Rosenthal, is persuading insurance companies to accept radiology’s standards for utilization. In the present, sometimes chaotic situation, he said, accepted medical practices may not be covered by insurance, creating a difficult situation for systems intended to provide advice. He said this difficulty is most severe for preventive care but also extends to diagnostic services. Radiology has made some important progress, he said, noting, “Insurers will cover mammograms every year and examination of pulmonary nodules every six months—because we’ve recommended it.”

Obtaining physician feedback is vital in determining what situations lead to ordering less-than-ideal diagnostic imaging, said Dr. Reed, adding that Children’s Hospital is improving its system as users encounter problems.

“We conduct regular, ongoing surveys and take observations, praise, suggestions and complaints,” he said. “The company we’re working with is very open to improvements.”

Partnerships with other product vendors are essential as well, said Drs. Reed and Rosenthal. “Many vendors of information systems will not allow separately developed order entry systems to access their databases and they are not developing their own systems. This is a serious barrier to progress,” said Dr. Rosenthal.

“The DICOM standard is supposed to make systems interconnectable,” added Dr. Reed. “Vendors are producing products that are theoretically compatible, but tend to include elements that prevent complete compatibility. They still need to work on integration.”

Drs. Rosenthal and Reed said they remain optimistic about the benefits of CPOE and look forward to its widespread integration. “I have some hope that very soon every institution will have a system that does most of these things,” Dr. Rosenthal said, “Because soon you won’t be able to do them without it.” □

Learn More

An RSNA 2005 presentation, “Lack of Integration between CPOE and RIS Is a Potential Source of Reporting Errors for Outpatient Radiology Studies,” looked at how frequently requesting physicians are incorrectly identified in radiology information systems due to manual data entry errors. See this presentation online by going to RSNA2005.RSNA.org, clicking Search in the upper left-hand corner and entering LPD12-06 in the Code box. The presentation can also be accessed by going to rsna2005.rsna.org/rsna2005/V2005/conference/event_display.cfm?id=66601&em_id=4406013.



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Journal Highlights

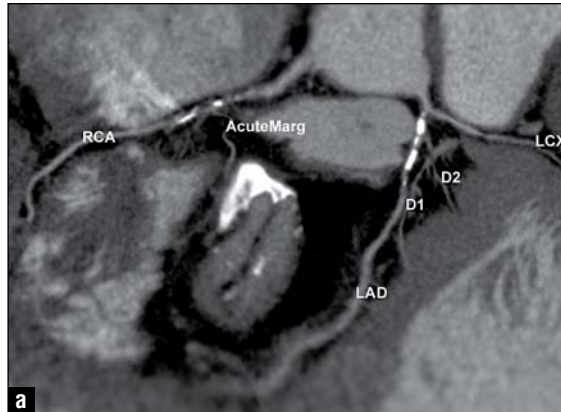
The following are highlights from the current issues of RSNA's two peer-reviewed journals.

Chest Pain in the Emergency Department: Role of Multidetector CT

CHEST PAIN accounts for about 5.8 million, or 5.1 percent, of the 113 million emergency department (ED) visits in the U.S. and is the second leading cause of ED presentation, according to a recent Centers for Disease Control and Prevention survey. Separating serious causes of chest pain—such as angina, pulmonary embolism and aortic dissection—from less serious ones is vital.

In a review article in the December issue of *Radiology* (RSNA.org/radiology), Charles S. White, M.D., and Dick Kuo, M.D., of the University of Maryland School of Medicine, review the challenges surrounding the current clinical and imaging work-up of chest pain in the ED and detail the potential role of CT. Specifically, they address:

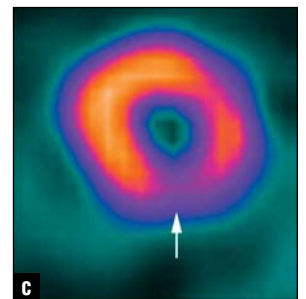
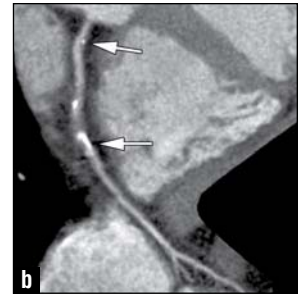
- Initial assessment
- Radionuclide perfusion imaging and echocardiography
- Electron-beam CT



CT and radionuclide perfusion images in a 67-year-old man who presented to the emergency department with atypical chest pain.

(a) 2D map of the coronary arteries from a CT triple rule-out protocol shows substantial calcification with areas of stenosis in the left anterior descending (LAD) and right coronary arteries (RCA). AcuteMarg = acute marginal, D1 = first diagonal, D2 = second diagonal, LCX = left circumflex artery. (b) Curved planar reconstructed view of right coronary artery demonstrates substantial calcified and noncalcified plaque causing luminal narrowing (arrows). (c) Radionuclide perfusion image shows a defect (arrow) in the inferior myocardial wall.

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• Multidetector CT, particularly in the ED
 “Initial investigations suggest that CT angiography has considerable potential to streamline chest pain evaluation in the ED, but further inves-

tigation is imperative to establish its precise role,” the authors conclude.

Diagnosis Please Deadline Changed

BEGINNING with the January issue of *Radiology*, the deadline to submit answers for the monthly Diagnosis Please challenge will be the 10th of the month.

Launched in 1998, Diagnosis Please presents a new challenging case each month. Readers

are asked to submit a diagnosis based on the history and imaging findings provided. Four months later—to allow international readers a chance to participate—the answer is presented along with a discussion of the differential diagnosis. Hundreds of responses are submitted for

each month's case. Names of readers who submit the highest number of most likely diagnoses have historically been published in *Radiology* and will also now appear in *RSNA News*.



Cardiac Conduction System: Anatomic Landmarks Relevant to Interventional Electrophysiologic Techniques Demonstrated with 64-Detector CT

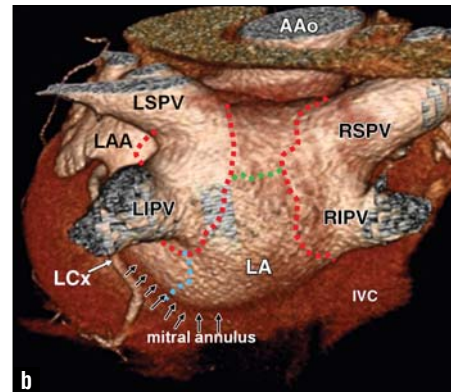
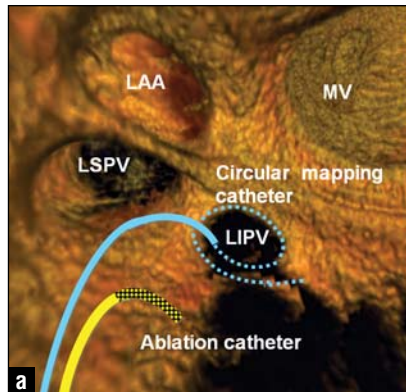
IMPROVEMENTS in the treatment of patients with cardiac arrhythmias have driven increased use of cardiac imaging procedures such as multidetector CT (MDCT). Advances in MDCT scanners, in turn, have elevated the radiologist's role in interpreting cardiac images. By providing the electrophysiologist with an anatomic "road map," the radiologist makes

RadioGraphics

ablation and pacing procedures easier and ensures that results as well as complications are recognized immediately.

In an article in the November-December issue of *RadioGraphics* (RSNA.org/radiographics), Farhood Saremi, M.D., and Subramaniam Krishnan, M.D., of the University of California, Irvine Medical Center describe normal cardiac anatomy as well as anatomic landmarks of interest to electrophysiologists. Drs. Saremi and Krishnan also detail common arrhythmias and electrophysiologic procedures. Among the areas they address:

- Left and right atria, interatrial septum and septal components of the AV junction
- Anomalous pulmonary and systemic connections



AF ablation. LIPV = left inferior pulmonary vein, LSPV = left superior pulmonary vein. (a) Endoscopic image shows how two catheters are introduced into the left atrium through a transseptal puncture, including a deflectable circular mapping catheter (blue) and a deflectable ablation catheter (yellow). LAA = left atrial appendage, MV = mitral valve. (b) Posterior 3D image of the left atrium and pulmonary veins demonstrates circumferential pulmonary vein ablation. Circumferential ablation lines (red lines) around two pulmonary vein lesions are connected by a roof ablation line (green). A mitral isthmus ablation line (blue) was created between the left inferior pulmonary vein and the lateral mitral annulus (arrows). AAO = ascending aorta, LA = left atrium, LCx = left circumflex artery, RIPV = right inferior pulmonary vein, RSPV = right superior pulmonary vein.

(RadioGraphics 2007;27:1539-1567) © RSNA, 2007. All rights reserved. Printed with permission.

- Tachycardias, including paroxysmal supraventricular tachycardia, atrial flutter and atrial fibrillation
- Important considerations in MDCT prior to pre-cardiac resynchronization therapy
- Role of multidetector CT in catheter ablation procedures for atrial fibrillation
- What electrophysiologists need to know before performing atrial fibrillation ablation

"Accurate anatomic description of the heart requires the use of a common language in describing cardiac anatomy, as well as close interaction

among radiologists, cardiologists and surgeons," the authors conclude. "High-resolution reformatted images from 64-detector CT data provide accurate anatomic information for locating important landmarks relative to the cardiac conduction system or to current electrophysiologic interventions and cardiac resynchronization therapy."

This article meets the criteria for 1.0 AMA PRA Category 1 Credit.

Media Coverage of Radiology

In October, media outlets carried 205 news stories generated by articles appearing in *Radiology*. These stories reached an estimated 162 million people.

News releases promoted findings from studies on the use of fMRI to identify brain abnormalities associated with Alzheimer disease (*Radiology* 2007;245:224-235) and the use of MR spectroscopy to distinguish benign from malignant breast lesions (*Radiology* 2007;245:80-87).

Print coverage included placements in the *Vancouver Sun*, *Orlando Sentinel*, *Birmingham Mail*, *Essence*, *Ms. Fitness*, *Harvard Women's Health Watch* and *Biophotonics International*. Prominent Web placements included Yahoo! News, WebMD, Excite News, iVillage, Science Daily, *ajc.com*, *4woman.gov*, *monstersandcritics.com*, *forbes.com*, *washingtonpost.com*, *healthcentral.com*, *docguide.com* and *medscape.com*.

Public Information Activities Spotlight Interventional Radiology

In December, RSNA's 60-Second Checkup radio program focuses on interventional radiology topics such as thrombolysis, angioplasty to alleviate peripheral vascular disease and minimally invasive treatments for varicose veins and other venous diseases.

Working For You

RSNA Committees

RSNA News continues its series highlighting the work of RSNA's volunteer committees with a look at the Molecular Imaging Committee.

Molecular Imaging Committee

AS THE field of molecular imaging continues to rapidly evolve, the RSNA Molecular Imaging Committee monitors the scientific and clinical applications and works with other RSNA committees and the RSNA Board of Directors to guide policies, education and resources for molecular and functional imaging.

The Molecular Imaging Committee was established in March 2005, around the same time RSNA joined efforts with SNM to anticipate the changes in the imaging sciences that result as molecular biology, nanotechnology, genomics and proteomics increasingly affect medical practice and imaging in particular.

2005-2007 Committee Chair Ralph Weissleder, M.D., Ph.D., said the committee has grown significantly in size

and international representation since its inception. "This reflects the increasing importance this field has in radiology," he said.

Seeing the newest scientific developments in real-life practice is by far the most rewarding aspect of working for the committee, said Dr. Weissleder.

"We are able to advance cutting-edge science to practical clinical applications for the community," he said.

Dr. Weissleder said he foresees molecular imaging having a strong impact on PET-CT and optical and MR imaging, with developments in the subspecialty also influencing diagnosis and interventional image-guided procedures.

The Molecular Imaging Committee has developed several education and informational activities for RSNA

members, including the "Imaging in Molecular Medicine" special symposia, sponsored in 2006 with SNM and the Society for Molecular Imaging (SMI) and with SNM, SMI



Ralph Weissleder, M.D., Ph.D.

and the Academy of Molecular Imaging in 2007. The committee also oversaw the RSNA 2007 Molecular Imaging Symposium and the Molecular Imaging Zones at RSNA 2006 and RSNA 2007.

For information about volunteering for the Molecular Imaging Committee or other RSNA committees, go to RSNA.org/About/whoswho/committees/.

Working
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COMMITTEE
PROFILE



Revitalizing the Radiology Research Enterprise Workshop

More than 30 people attended a Revitalizing the Radiology Research Enterprise (RRRE) workshop held Oct. 19-20 at RSNA Headquarters in Oak Brook, Ill. The RRRE program is designed to help academic radiology and radiation oncology departments improve their ability to support and conduct radiologic research. The 1½ day workshop offered strategies for overcoming research challenges such as infrastructure, faculty development and sources of support. The RRRE program also conducts site visits to evaluate the departmental and institutional research environment. The workshop and site visits are held biannually. More information is available at RSNA.org/research/educational_courses.cfm.

RSNA Visits Chinese Congress

Several RSNA representatives participated in the 14th Chinese Congress of Radiology, held Oct. 19–21 in Nanjing. (a) 2007 RSNA President R. Gilbert Jost, M.D., told congress attendees about RSNA's educational resources, including the annual meeting and journals, as well as the Research & Education (R&E) Foundation and the Integrating the Healthcare Enterprise (IHE®) initiative. (b, from left) R&E Foundation Director Joseph Taylor, Assistant Executive Director for Publications and Communications Roberta E. Arnold, M.A., M.H.P.E., and Dr. Jost greeted visitors to the RSNA exhibit. (c) Dr. Jost and RSNA Executive Director Dave Fellers, C.A.E. (second from left) met with Chinese Society of Radiology officers (from left): Cheng Zhou, M.D., general secretary; Ji Qi, M.D., Ph.D., president; and Xiaoyuan Feng, M.D., vice-president.



Daily Scan Gets New Look

RSNA has extended *The Daily Scan* electronic news briefing, an exclusive member benefit, for another year. The *Scan* was also recently redesigned to be more user-friendly.

Offered in collaboration with *U.S. News & World Report*, the e-mail briefing summarizes developments of potential interest to RSNA members, covering such topics as radiology research, patient safety and technology.

The daily news briefing is e-mailed early each weekday morning to the e-mail address the member has on file with RSNA. To ensure *The Daily Scan* reaches their inbox each morning, members should add *DailyScan@rsna.custombriefings.com* to their e-mail address book. Members may opt out at any time by following simple instructions included with each day's briefing.



New Learning Management System Offered

A new learning management system has simplified RSNA's InteractED® online CME. The new interface helps users take online courses or self-assessment modules (SAMs), manage their maintenance of certification (MOC) progress and purchase educational products. More than 5,000 users per month earn CME from Cases of the Day, refresher courses, *RadioGraphics* tests and SAMs.



Access to the system is free to RSNA members as a member benefit. See the new design at *RSNA.org/education*. RSNA welcomes questions and feedback on the new site. Comments can be e-mailed to *ed-ctr@rsna.org*.

2007 RSNA Syllabus Now Available

The 2007 syllabus, *Categorical Course in Diagnostic Radiology: Clinical PET and PET/CT Imaging*, is available for purchase from the RSNA Education Center. The syllabus includes more than 20 chapters on topics such as PET basics and imaging protocols, clinical/cardiac PET/CT, the National Oncologic PET Registry and emerging PET applications. Up to 19 *AMA PRA Category 1 Credits™* are available.

RSNA syllabi are available in print, CD-ROM and PDF. For information about pricing and to purchase the 2007 syllabus or view a complete syllabi listing, go to *RSNA.org/education*. Questions about courses or products can be directed to the RSNA Education Center at 1-800-272-2920 or 1-800 381-6660 x3753.



If you have a colleague who would like to become an RSNA member, you can download an application at *RSNA.org/mbrapp* or contact the RSNA Membership and Subscriptions Department at 1-877-RSNA-MEM [776-2636] (U.S. and Canada), 1-630-571-7873 or *membership@rsna.org*.

Program and Grant Announcements

Apply Now for RSNA Research & Education Foundation Grants

Education Grants • January 10, 2008

Applications will be accepted through January 10, 2008, for the Educational Scholar, Education Seed, Fellowship Training and Education Research Development grant programs.

Research Grants • January 15, 2008

Applications will be accepted through January 15, 2008, for the Research Scholar, Research Resident/Fellow and Research Seed grant programs.

The online grant application system and more information on all grant programs are available at RSNA.org/Foundation/applications.cfm.

Writing a Competitive Grant Proposal

February 1–2, 2008 • RSNA Headquarters, Oak Brook, Ill.

This 1½ day, intermediate-level course is for researchers in the field of radiology and related sciences interested in pursuing federal funding. Guided by a faculty experienced in all aspects of grant application and funding processes, the program will be a combination of didactic and interactive small-group sessions, focusing on realistic expectations and tools for getting started.

For more information, including cost and application deadline, go to RSNA.org/grantwriting. Questions can be directed to Fiona Miller at fmiller@rsna.org or 1-630-590-7741.



IHE® Connectathon 2008 Conference

January 30, 2008 • Hyatt Regency Chicago—Wacker Drive

The 2008 Integrating the Healthcare Enterprise (IHE®) Connectathon will include a one-day conference, featuring presentations from leaders of national health-care information technology organizations as well as an introduction to IHE and the Connectathon



process and a tour of the event. More than 120 healthcare leaders and industry representatives attended the 2007 conference.

At the IHE Connectathon, companies test the interoperability of their health information systems by exchanging information with complementary systems of multiple vendors. Thousands of vendor-to-vendor connections have been tested since the first Connectathon was held in 1998.

For more information, go to www.ihe.net/connectathon/.

RSNA-Sponsored Courses at the Association of University Radiologists (AUR) Annual Meeting

March 25–29, 2008 • Seattle

MERC Workshops Part of the Association of American Medical Colleges (AAMC) Medical Education Research Certificate (MERC) Program, these workshops are targeted to clinicians and other educators who want to learn research skills enabling collaborative participation in medical education research projects. “Questionnaire Design and Construction” and “Program Evaluation” workshops will be offered during AUR on Tuesday, March 25.

Radiology Informatics: What the Academic Radiologist Needs to Know This session, also offered Tuesday, March 25, addresses informatics for radiology education, detailing how to optimize a teaching portfolio and improve radiology communication. A session on informatics for practice administration explores mining data to ensure quality and safety, while a session on informatics for imaging research looks at systems for imaging investigators.

More information about all sessions is available at www.AUR.org.

Tools for Success in the Practice of Radiology

June 6-7, 2008 • RSNA Headquarters, Oak Brook, Ill.

Registration Opens March 1, 2008 — Limited Seating Available

Participants in this course will learn about and discuss proven tools, including strategic, operational and financial planning, that sustain success in the practice of radiology. Participants will also develop tools to promote communication within their work settings and establish an effective programmatic approach to staff development and evaluation. Intimate, informative lectures will be complemented by interactive breakout sessions and discussion of individual case-based scenarios from academic and private practice. For more information, contact the RSNA Education Center at 1-800-381-6660 x7772 or ed-ctr@rsna.org.



RSNA Highlights™ 2008: Clinical Issues

Register by January 28 and Save \$100

RSNA Highlights™ 2008: Clinical Issues will be held February 18–20, 2008, in Orlando, Fla., at the Ritz-Carlton/JW Marriott Orlando, Grande Lakes.

A series of refresher courses, including some unique to Highlights 2008, will be offered along with electronic education exhibits and hot topics sessions from RSNA 2007. Courses will focus on thoracic radiology, cardiac

imaging, head and neck radiology and breast imaging, while hot topics sessions will address the latest developments PET/CT and body MR imaging.

United.com offers RSNA Highlights attendees special fares and discounts on select United Airlines, United Express and TED qualifying flights. Use the electronic certificate number 553SB to make a discounted airline reservation



RSNA Highlights™ 2008: Clinical Issues
February 18–20 • Ritz-Carlton/JW Marriott Orlando, Grande Lakes

online at *United.com*. You can also call United at 1-800-521-4041 or your personal travel agent and mention the discount 553SB to be eligible for the discounted fares.

For more information and to register now, go to *RSNA.org/Highlights*.

News about RSNA 2008

Submit Abstracts for RSNA 2008

The online system to submit abstracts for RSNA 2008 will be activated in mid-January. **The submission deadline is 12:00 p.m. Central Time on April 15, 2008.** Abstracts are required for scientific papers, scientific posters,

education exhibits and a new category, applied science exhibits.

To submit an abstract online, go to *RSNA.org/abstracts*.

The easy-to-use online system helps the Scientific Program Commit-

tee evaluate submissions more efficiently. For more information about the abstract submission process, contact the RSNA Program Services Department at 1-877-776-2227 within the U.S. or 1-630-590-7774 outside the U.S.



RSNA2008
Personal Learning in the Global Community

Important Dates for RSNA 2008

- April 15** Deadline for abstract submission
- April 21** RSNA/AAPM member registration and housing opens
- May 19** Non-member registration and housing opens
- June 30** Refresher course enrollment opens
- Nov. 7** Final advance registration, housing and course enrollment deadline
- Nov. 30–Dec. 4** RSNA 94th Scientific Assembly and Annual Meeting

RSNA 2007 – Scientific Abstracts Accepted by Country

North America		International	
Canada	55	Algeria	1
United States	899	Argentina	4
Mexico	1	Australia	5
		Austria	24
		Belgium	12
		Brazil	17
		China	164
		Columbia	1
		Croatia	1
		Denmark	2
		Egypt	30
		Finland	4
		France	51
		Georgia	2
		Germany	240
		Greece	9
		Hong Kong	5
		India	26
		Iran	1
		Ireland	23
		Israel	22
		Italy	140
		Japan	215
		Netherlands	60
		New Zealand	1
		Norway	3
		Pakistan	1
		Poland	8
		Portugal	2
		Qatar	1
		Romania	1
		Russia	1
		Singapore	2
		South Africa	1
		South Korea	192
		Spain	28
		Sweden	4
		Switzerland	22
		Taiwan ROC	14
		Turkey	9
		Ukraine	3
		United Arab Emirates	1
		United Kingdom	63
		Uruguay	1
Total North America		Total International	
955		1,417	
		TOTAL	
		2,372	

Product News

NEW PRODUCT

Ergonomic Workstation

ANTHRO (www.anthro.com) has introduced Carl's Table model CT08, designed for complete workstation comfort, according to the company. The ergonomic desk easily adjusts from 28.5" to 48.5". Height memory presets, table tilt adjustment and electronic monitor adjustment move the monitors independently with the push of a button. CT08 features glare-free ambient backlighting, individual monitor light sensors, manually dimmed task lights and work surface-mounted air circulation.



NEW PRODUCT



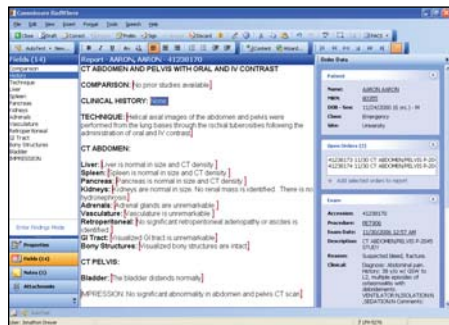
Ferromagnetic Detector

Kopp Development Inc. (www.koppdevelopment.com) has added FERRALERT HALO™ ENTRY to its line of detectors designed to reduce the risk of ferromagnetic projectiles entering the MR magnet. The device is installed unobtrusively at the approach to the MR magnet room, between Zones II and III in the American College of Radiology recommendations, or at the magnet room doorway. If a ferromagnetic object is detected, an audio alarm sounds and the location of the offending ferrous object is pinpointed on the portal. Adjustable portal width allows for custom fit installation.

NEW PRODUCT

Gel Warming Systems

Parker Laboratories (www.parkerlabs.com) announces two new THERMASONIC® Gel Warmers, a single-bottle warmer and a newly designed three-bottle warmer, that allow couplants to be applied at body temperature. The three-bottle warmer features adjustable thermostat control, heat indicator lamp and illuminated power switch. The single bottle warmer also includes a heat indicator lamp.



Speech Reporting Upgrade

Commisure Inc. (www.commissure.com) has released RadWhere™ version 2.0, an upgrade to its structured speech reporting/workflow/communication system. Incorporating a host of new features based heavily on user feedback, RadWhere version 2.0 includes an updated speech engine, integrated American College of Radiology-compliant peer review, enhanced clinical content, user customization improvements, integration with analytical tools and enhancements for managing workflow.

RSNA.org

The New RSNA.org

FEEDBACK provided by RSNA annual meeting attendees over the past couple years has spurred an exciting new look and level of usability.

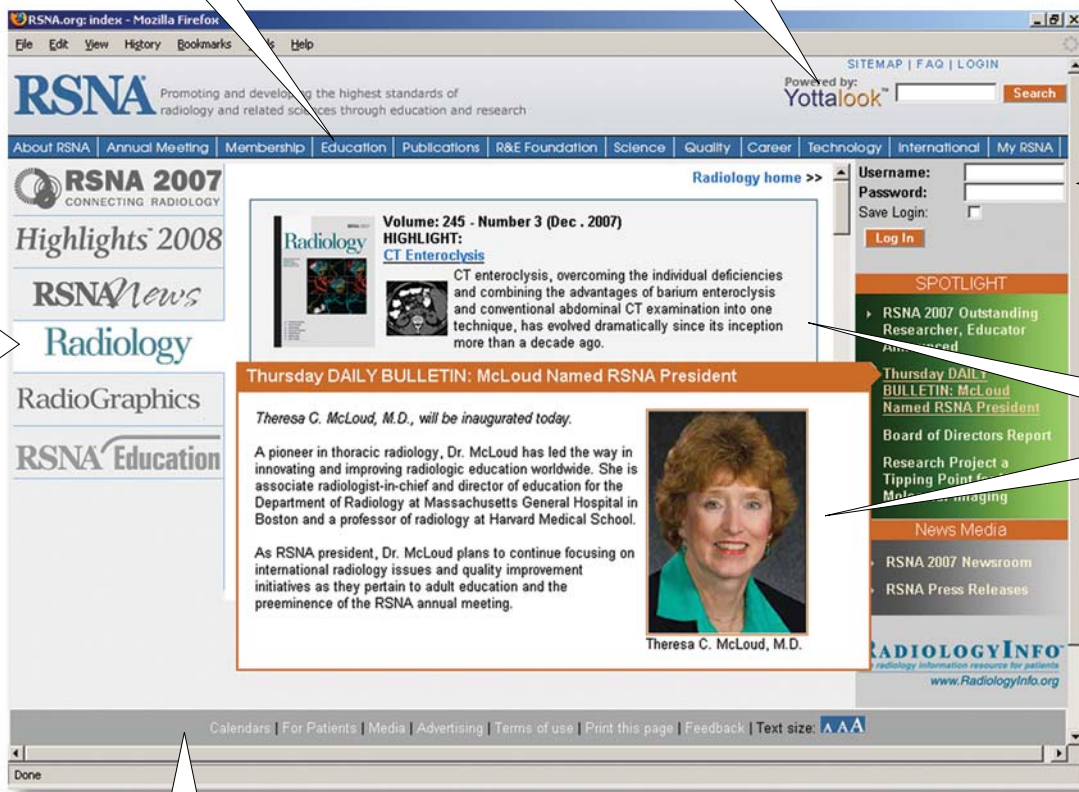
A horizontal navigation bar eliminates the need to scroll vertically and is easier to mouse over.

Yottalook™, a radiology-centric, Google™-based search engine, modifies search results based on real-time analysis of user queries. Yottalook incorporates features for users looking solely for the definition of a radiology term and a search specifically for images.

RSNA journal articles are directly accessible from the home page. There are also direct links to the recent or upcoming annual meeting site and to information about other educational events such as RSNA Highlights™.

Members may login to the new My RSNA® personalized Web page directly from the right column of the home page.

Display of content like news and spotlighted items is dynamic, presenting different material each time the page is opened or refreshed.



New and enhanced color palette, condensed presentation, dynamic main content and other attractive features improve visual appeal and interactivity.

connections

Your online links to RSNA

RSNA.org

Radiology Online

RSNA.org/radiology

Radiology Manuscript Central

RSNA.org/radiology/submit

RadioGraphics Online

RSNA.org/radiographics

RSNA News

rsnanews.org

Education Portal

RSNA.org/education

RSNA CME Credit Repository

RSNA.org/cme

CME Gateway

CMEgateway.org

InterOrganizational Research Council

radresearch.org

RSNA Medical Imaging Resource Center

RSNA.org/mirc

RSNA Career Connection

RSNA.org/career

RadiologyInfo™

RSNA-ACR patient information Web site
radiologyinfo.org

RSNA Press Releases

RSNA.org/media

My RSNA Profile & Benefits

RSNA.org/memberservices

RSNA Research & Education (R&E) Foundation

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RSNA.org/donate

R&E Foundation Silver Anniversary Campaign

RSNA.org/campaign

Community of Science

RSNA.org/cos

CQI Initiative

RSNA.org/quality

Membership Applications

RSNA.org/mbrapp

RSNA Membership Directory

RSNA.org/directory

RSNA 2007

RSNA2007.RSNA.org

RSNA Highlights™ 2008

RSNA.org/Highlights

NEW

RSNA 2008

RSNA2008.RSNA.org

NEW

Abstract Submission

RSNA.org/abstracts

NEW

My RSNA®

RSNA.org – click My RSNA

Medical Meetings

January – May 2008

JANUARY 17-19

Bioengineering & Imaging Research Opportunities Workshop (BIROW V), Bethesda North Convention Center, Rockville, Md.
• www.birow.org

JANUARY 17-20

Indian Radiological & Imaging Association (IRIA), 61st Annual Congress, Bangalore International Exhibition Center, Bangalore, Karnataka • www.iriablr2008.com

JANUARY 30-FEBRUARY 3

Sociedad Mexicana de Radiología e Imagen (SMRI), 42nd Annual Radiology and Imaging Course, Hotel Sheraton Centro Histórico, Mexico City • www.smri.org.mx

FEBRUARY 9-10

Armed Forces Institute of Pathology (AFIP), 23rd Annual Neuro-radiology Course, Hyatt Regency Denver at Colorado Convention Center • www.afip.org/Departments/edu/upcoming.htm

FEBRUARY 16-21

SPIE, Medical Imaging, Town and Country Resort & Convention Center, San Diego • www.spie.org

FEBRUARY 17-22

Society of Gastrointestinal Radiologists and Society of Uroradiology, Annual Meeting and Abdominal Radiology Postgraduate Course, Westin Mission Hills Resort & Spa, Rancho Mirage, Calif.
• www.sgr.org

FEBRUARY 18-20

RSNA Highlights™, Ritz-Carlton/JW Marriott Orlando, Grande Lakes, Florida • RSNA.org/Highlights

FEBRUARY 20-22

American Institute for Medical and Biological Engineering (AIMBE), 17th Annual Event, JW Marriott Hotel Pennsylvania Avenue, Washington • www.aimbe.org

FEBRUARY 25-28

Healthcare Information and Management Systems Society (HIMSS), Annual Conference and Exhibition, Orange County Convention Center, Orlando, Fla. • www.himssconference.org

MARCH 2-5

Society of Thoracic Radiology (STR), Annual Meeting, Sanibel Harbour Resort & Spa, Fort Myers, Fla. • www.thoracicrad.org

MARCH 7-11

European Congress of Radiology (ECR), Annual Meeting, Austria Center, Vienna • www.ecr.org

MARCH 12-15

American Institute of Ultrasound in Medicine (AIUM), Annual Convention, San Diego Marriott Hotel and Marina
• www.aium.org

MARCH 15-20

Society of Interventional Radiology (SIR), 33rd Annual Scientific Meeting, Washington, D.C., Convention Center
• www.sirmeeting.org

MARCH 25-29

Association of University Radiologists (AUR)/Society of Chairmen of Academic Radiology Departments (SCARD)/Association of Program Directors in Radiology (APDR), In Collaboration with RSNA, 56th Annual Meeting, Sheraton Seattle Hotel
• www.aur.org

MARCH 30-APRIL 4

Society of Computed Body Tomography and Magnetic Resonance (SCBT-MR), 31st Annual Course, Charleston Place Hotel, South Carolina • www.scbtmr.org

APRIL 4-6

Japan Radiological Society (JRS), 67th Annual Meeting, Pacifico Yokohama, Japan
• www.secretariat.ne.jp/jrs67/english/invitation_eng.html

APRIL 13-18

American Roentgen Ray Society (ARRS), 108th Annual Meeting, Marriott Wardman Park Hotel, Washington • www.rrs.org

MAY 3-9

International Society for Magnetic Resonance in Medicine (ISMRM), 16th Scientific Meeting and Exhibition, Toronto
• www.ismrm.org

MAY 4-6

2008 World Congress of Brachytherapy, Marriott Copley Place, Boston • www.americanbrachytherapy.org

NOVEMBER 30-DECEMBER 5

RSNA 2008, 94th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • RSNA2008.RSNA.org

RSNANews

RSNA News
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